REMARKS

Claims 1, 4-7, 10-14, 16, 17, 20, 21, 23, 24, and 26 are pending, with claims 1, 7, 13, 17, 21, and 24 being independent. Reconsideration and allowance of the above-referenced application are respectfully requested.

Rejections under 35 U.S.C. 102 & 103

Claims 13 and 14 stand rejected under 35 U.S.C. 102(b) as allegedly being anticipated by Cideciyan et al. (U.S. Patent No. 6,377,635). Claim 16 stands rejected under 35 U.S.C. 103 as allegedly being anticipated by Cideciyan in view of McEwen et al. (U.S. Patent No. 6,366,418). These contentions are respectfully traversed.

Independent claim 13 recites "a branch metric generator that generates branch metrics comprising a cross-correlation of obtained output sequences and estimated output sequences for a partial response channel; an add-compare-select component that compares paths and determines survivor paths using generated branch metrics; a memory that retains metrics information; and a trace-back component that determines a best path of the survivor paths and outputs sequence information based on the determined best path; wherein the partial response channel has a transfer function defined according to a target polynomial, $T(D) = p_0 + p_1 D + \cdots + p_M D^M$, and all the survivor paths merge in M steps."[1] The Office cites to equations 3 and 4 of Cideciyan as allegedly teaching the claimed branch metric generator that generates branch metrics comprising a cross-correlation of obtained output sequences and

[1] Emphasis added.

estimated output sequences for a partial response channel. However, while it is true that these equations in Cideciyan show the cross-correlation term, the cross-correlation is not used as claimed in the present application.

The cross-correlation term in the presently claimed invention corresponds to a cross-correlation of obtained output sequences and estimated output sequences for a partial response channel. Cideciyan does disclose that: "the first sum contains terms that depend on the channel output, referred to as data dependent or time-varying terms[.]"[2] The time varying terms or data dependent terms correspond to the cross-correlation term in equations 3 and 4 of Cideciyan.[3] However, Cideciyan does not teach using the claimed cross-correlation in the branch metrics generated by a branch metric generator, which branch metrics are then used by an add-compare-select component to determine survivor paths, as presently claimed. The branch metrics generated for use by the add compare select (ACS) unit in Cideciyan explicitly do not include a cross-correlation of obtained output sequences and estimated output sequences.[4] Thus, far from teaching the present invention, Cideciyan actually teaches away from the present invention.

For all least this reason, independent claim 13 should be in condition for allowance. Since McEwen fails to cure the deficiencies of Cideciyan, each of dependent claims 14 and 16 should be allowable based on at least the above arguments.

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[2] *See* Cideciyan at col. 4, lines 31-40.
[3] *See* Cideciyan at col. 4, lines 4-67.
[4] *See e.g.*, Cideciyan at Abstract, and at col. 4, line 64, to col. 6, line 47.

Rejection under 35 U.S.C. 103

Claims 1, 4-7, 10-12, 17, 20, 21, 23, 24, and 26 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Cideciyan et al. (U.S. Patent No. 6,377,635) in view of Fisher et al. (U.S. Patent No. 6,249,398). This contention is respectfully traversed.

Independent claim 1 recites, "obtaining an output signal sequence from a partial response channel; determining an input sequence of the partial response channel by maximizing cross-correlation of an estimated output sequence with the obtained output sequence, the estimated output sequence being estimated based on the partial response channel; and providing an output corresponding to the determined input sequence; wherein said determining the input sequence comprises employing Viterbi detection using a cross-correlation branch metric; and wherein the partial response channel has a transfer function defined according to a target polynomial, $T(D) = p_0 + p_1 D + \cdots + p_M D^M$, the Viterbi detection operates according to a trellis having 2^M states, and all survivor paths associated with all the 2^M states in the trellis merge in M steps."[5] As noted above, Cideciyan does employ a cross-correlation of an estimated output sequence with an obtained output sequence in the process of designing a Viterbi detection method and apparatus. However, Cideciyan does not describe determining an input sequence of the partial response channel by maximizing cross-correlation of an estimated output sequence with the obtained output sequence. Moreover, the Office's bare citation to Figs. 8-14 of Cideciyan fails to support the contention that Cideciyan teaches that "all the survivor paths merge in M steps", as recited in the claim.

[5] Emphasis added.

Independent claims 7 and 17 recite similar language as found in claim 1, and Fisher fails to cure the deficiencies of Cideciyan. Thus, for at least the above reasons, each of independent claims 1, 7 and 17 should be in condition for allowance. Dependent claims 4-6, 10-12, and 20 should be allowable based on at least the above arguments.

Independent claim 21 recites, "an input line that provides a sampled channel sequence; and Veterbi detection means for determining a recovered sequence from the sampled channel sequence, the Viterbi detection means including means for maximizing cross-correlation of the recovered sequence and the sampled channel sequence; wherein the sampled channel sequence comprises a waveform of widely varying amplitude, and the Viterbi detection means provides robust tolerance of phase uncertainty with the widely varying amplitude waveform."[6] The arguments presented above regarding maximizing cross-correlation are applicable to claim 21 as well. Thus, claim 21 should be allowable for at least similar reasons.

Moreover, as noted in the last Response, Fisher uses an error generator 64 to provide input via a path 67 to timing control circuitry 70, which in turn adjusts the sampling phase of the sampler 46. However, components 64, 67, 70 and 46 are clearly separate from the Viterbi detector 60.[7] Thus, these components cannot be equated with the claimed subject matter, where "the Viterbi detection means provides robust tolerance of phase uncertainty."[8] In response to this point, the Office submits that, "Fisher discloses of a gain control (#68, Fig. 2) to control amplitude variations of any received signal amplitudes (including very small amplitude) in a variable gain filter and a timing recovery unit to provide a robust tolerance of phase uncertainty

[6] Emphasis added.
[7] *See* Fisher at FIG. 2.
[8] Emphasis added.

to the signal inputted to the Viterbi detector from the loop as shown in Figure 2."[9] However, this supports Applicant's very point. Fisher is describing processing done to the signal provided to the Viterbi detector 60, where this signal processing is done by components outside the Viterbi detector 60, not signal processing performed by the Viterbi detector 60. Thus, claim 21 should be allowable for at least this additional reason.

Independent claim 24 recites similar language as found in claim 21. Thus, for at least the above reasons, independent claim 24 should also be in condition for allowance. Dependent claims 23 and 26 should be allowable based on at least the above arguments.

CONCLUSION

The foregoing comments made with respect to the positions taken by the Office are not to be construed as acquiescence with other positions of the Office that have not been explicitly contested. Accordingly, the above arguments for patentability of a claim should not be construed as implying that there are not other valid reasons for patentability of that claim or other claims.

In view of the present response, all of the claims should be in condition for allowance. A formal notice of allowance is respectfully requested.

[9] *See* 08-19-2008 Office Action at page 10.

Please apply the two month extension of time fee, and any other necessary charges or credits, to deposit account 06-1050.

Respectfully submitted,

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